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(54) SEAT UNIT FOR A VEHICLE CABIN

SITZEINHEIT FÜR EINE FAHRZEUGKABINE

UNITÉ DE SIÈGE POUR UNE CABINE DE VÉHICULE

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Description

FIELD OF THE INVENTION

[0001] The invention relates to seat units for vehicle cabins, particular seat units comprising two seats arranged in opposing directions.

BACKGROUND

[0002] As is well-known, business class aircraft seats offer passengers different comfort positions, from the seat position to a bed position that is substantially horizontal in flight.

[0003] Business class aircraft seat units have also been designed that offer both forward and aft facing seats, which are usually overlapping with one another to take advantage of the additional space at one passenger's feet to provide additional space for another passenger's upper body. Furthermore, these arrangements typically do not provide secondary seating arrangements for visiting passengers.

[0004] These business seat units are typically a conventional width used for business class passenger seats and therefore do not provide other options for passengers to be seated with their bodies in multiple orientations relative the orientation of the seat.

[0005] Thus, it may be desirable to provide a seat unit having forward and aft facing arrangements that do not require any overlapping designs for bed positions. It may also be desirable to provide a seat unit having room for secondary seating for visiting passengers. It may further be desirable to provide a seat unit in which each seat is designed to accommodate multiple seating orientations.
US 2012/298798 A1 discloses seat units comprising facing seats with a partition between the seats having a foot compartment provided for an aft-facing passenger.
US 2007/040434 A1 discloses seat units comprising facing seats with a partition between the seats.

SUMMARY OF THE INVENTION

[0006] The invention is as set out in the appended claims .

[0007] According to the present invention, a seat unit comprises two seats arranged facing one another, the two seats optionally being substantially laterally aligned with each other and with respect to a longitudinal axis of the seat unit, a partition positioned between the two seats, wherein the partition comprises two footwells arranged facing in opposing directions so that an opening in each footwell is accessible by a passenger seated in one of the two seats that faces the opening in the footwell, and each seat comprises a seat back, a headrest, and a seat pan, wherein each of the two seats is configured to convert between a seat position and a bed position.

[0008] In the present invention, each of the two footwells comprises an enclosed portion having an upper surface that is configured as a table for use by a passenger seated in the one of the two seats that does not face the opening of the corresponding footwell.

[0009] In certain embodiments, the partition may further comprise an upper wall that extends above the two footwells, wherein a monitor is mounted to the upper wall. The monitor may be slidingly mounted to transition from a stowed location above the footwell with the opening facing away from the seat that faces the monitor to a deployed position above the footwell with the opening facing the seat that faces the monitor.

[0010] In some embodiments, an upper surface of each of the two footwells may also form a secondary seat when the seat facing the opening in the footwell is in the seat position.

[0011] According to some embodiments, the bed position comprises a bed surface formed by at least a stationary lower surface of the footwell, the seat pan, and the seat back in a substantially horizontal position.

[0012] Each of the two seats may further comprise at least one armrest coupled to a side wall of a shell partially surrounding each of the two seats. The at least one armrest may slide down into a retracted position substantially aligned with the bed surface. The at least one armrest may also be positioned so that an upper surface of the at least one armrest is substantially aligned with an upper surface of the seat back in the seat position. In some embodiments, the seat back may comprise at least one pivotally attached cushion that pivots outward into a position to form a supplemental armrest.

[0013] According to certain embodiments of the present invention, a seat unit comprises two primary seats arranged facing in opposing directions, wherein each seat comprises a seat back, a headrest, and a seat pan, and is configured to convert between a seat position and a bed position, and a partition positioned between the two primary seats, wherein the partition comprises two secondary seats arranged facing in opposing directions, wherein each secondary seat is also arranged facing one of the two primary seats.

[0014] In certain embodiments, the partition further comprises an upper wall that extends above the two secondary seats, wherein a monitor is mounted to the upper wall. The monitor may be slidingly mounted to transition from a stowed location above the secondary seat that faces away from the seat that faces the monitor to a deployed position above the secondary seat facing the seat that faces the monitor.

[0015] According to some embodiments, the bed position comprises a bed surface formed by at least a stationary lower surface of the secondary seat, the seat pan, and the seat back in a substantially horizontal position.

[0016] Each of the two primary seats may further comprise at least one armrest coupled to a side wall of a shell partially surrounding each of the two primary seats. In some embodiments, the at least one armrest slides down into a retracted position substantially aligned with the bed surface.

[0017] According to certain embodiments of the present invention, a seat unit comprises two seats arranged facing in opposing directions, the two seats being oriented substantially parallel to a longitudinal axis of the seat unit, wherein each of the two seats has a width that is configured for a passenger to be seated in multiple orientations within each seat, which range from having his or her body oriented in a direction that is substantially parallel to the longitudinal axis of the seat unit to having his or her body oriented in a direction that is substantially perpendicular to the longitudinal axis of the seat unit.

[0018] In some embodiments, the seat unit further comprises a partition positioned between the two seats, the partition comprising two secondary seats arranged facing in opposing directions, wherein each secondary seat is also arranged facing one of the two seats. Each of the two seats may further comprise a seat back and at least one armrest coupled to a side wall of a shell partially surrounding each of the two seats, the at least one armrest positioned so that an upper surface of the at least one armrest is substantially aligned with an upper surface of the seat back in a seat position. In some embodiments, the seat back may comprise at least one pivotally attached cushion that pivots outward into a position to form a supplemental armrest.

[0019] According to certain embodiments of the present invention, a seat unit comprises at least one seat comprising a seat back, a headrest separated from the seat back, and a seat pan, wherein the at least one seat is configured to convert between a seat position and a bed position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] In the following detailed description, embodiments of the invention are described referring to the following figures:

Figure 1 is a perspective view of a seat unit, according to certain embodiments of the present invention.
Figure 2 is a top view of a cabin comprising an arrangement of a plurality of seat units, according to certain embodiments of the present invention.
Figure 3 is a top view of a cabin comprising another arrangement of a plurality of seat units, according to certain embodiments of the present invention.
Figure 4 is a top view of a cabin comprising another arrangement of a plurality of seat units, according to certain embodiments of the present invention.
Figure 5 is a top view of a cabin comprising another arrangement of a plurality of seat units, according to certain embodiments of the present invention.
Figure 6 is a top view of a cabin comprising another arrangement of a plurality of seat units, according to certain embodiments of the present invention.
Figure 7 is a top view of a seat unit showing one of the seats in a bed position, according to certain embodiments of the present invention.
Figure 8 is a top view of a seat unit showing one of the seats in a bed position, according to certain embodiments of the present invention.
Figure 9 is a perspective view of a seat unit showing one of the seats in a bed position and a monitor in a stowed position, according to certain embodiments of the present invention.
Figure 10 is a perspective view of a seat unit showing one of the seats in a bed position and a monitor in a deployed position, according to certain embodiments of the present invention.
Figure 11 is a top view of a seat unit showing a stowed position and a deployed position of a tray table, according to certain embodiments of the present invention.
Figure 12A is a top view of a seat unit showing a stowed position and a deployed position of a tray table, according to certain embodiments of the present invention.
Figure 12B is a top view of the seat unit of Figure 12A, showing the tray table in a side table position.
Figure 13 is a top view of a seat unit showing a stowed position and a deployed position of a tray table, according to certain embodiments of the present invention.
Figure 14 is a top view of a seat unit showing an overlapping closet arrangement, according to certain embodiments of the present invention.
Figure 15 is a perspective view of a seat unit showing locations of various stowage and other accessory options, according to certain embodiments of the present invention.

DETAILED DESCRIPTION

[0021] The subject matter of embodiments of the present invention is described here with specificity to meet statutory requirements, but this description is not necessarily intended to limit the scope of the claims. The claimed subject matter may be embodied in other ways, may include different elements or steps, and may be used in conjunction with other existing or future technologies. This description should not be interpreted as implying any particular order or arrangement among or between various steps or elements except when the order of individual steps or arrangement of elements is explicitly described.

[0022] While the embodiments of seat units may be described with reference to an aircraft cabin, they are by no means so limited. In fact, the seat units may be used in conjunction with any type of vehicle cabin or otherwise as desired.

[0023] According to certain embodiments of the present invention, as illustrated in Figures 1-15, a cabin 10 comprises an arrangement 12 formed by a plurality of seat units 14, each seat unit 14 comprising two seats 16, wherein the seats 16 are arranged to face one another, and a partition 18 is positioned between the seats

16. Each seat 16 may be arranged so that it is substantially laterally aligned with the other seat 16 with respect to a longitudinal axis Y of the seat unit 14.

[0024] The partition 18 comprises two footwells 20 arranged in opposing directions so that an opening 56 in each footwell 20 is accessible by a passenger seated in the seat 16 that faces the opening 56 in the footwell 20 (i.e., the mating seat 16).

[0025] While the seat units 14 may be discussed with reference to two seats 16, they are by no means so limited. For example in certain embodiments, such as at the ends of the cabin 10, the seat unit 14 may comprise one seat 16 with one footwell 20 in front of it inside a front row monument.

[0026] Each footwell 20 may comprise a stationary lower surface 22 and vertically oriented sides 24, 26. In certain embodiments, the vertically oriented side 24 of each footwell 20 forms at least a portion of an outer wall of the partition 18. As a result, the vertically oriented sides 24 may be arranged substantially parallel to a longitudinal axis X of the cabin 10.

[0027] In some embodiments, the two footwells 20 share the same inner vertically oriented side 26. The side 26 may be laterally angled so that the lateral dimension of each footwell 20 is wider at the opening 56 closer to the mating seat 16, and narrower at an opposing end of the footwell 20.

[0028] Each footwell 20 may be further enclosed by an upper surface 28 and a rear surface 30. The upper surface 28 of each footwell 20 may also serve as a table top, work surface, dining surface, cocktail table, or other usable surface for a passenger seated in the opposing seat 16 (i.e., the seat 16 that does not have access to the opening 56 in the footwell 20). The portion of the footwell 20 that is enclosed by the upper surface 28 and the rear surface 30 may extend into the space occupied by a passenger seated in the opposing seat 16. The space allotted to each passenger in the seat unit 14 may be further separated by an upper wall 32 that forms a portion of the partition 18 that extends above the footwells 20 and provide a location for mounting monitors 78 (as described in detail below), other electronic devices, and/or other stowage compartments.

[0029] The stationary lower surface 22 of each footwell 20 forms a lower surface of the enclosed portion that extends into the space of a passenger seated in the opposing seat 16, and may be configured to extend beyond the enclosed portion and upper wall 32 into the space of a passenger seated in the mating seat 16. The sides 24 and 26 may also be configured to extend a similar distance into the space of the passenger seated in the mating seat 16. As a result, the stationary lower surface 22 may be used as an ottoman by a passenger seated in the mating seat 16, and may also be used as a secondary seat 36 for another passenger to visit or work with a passenger seated in the mating seat 16 (or primary seat 16 that faces the secondary seat 36). The configuration of the secondary seat 36 and the mating seat 16 therefore has the feel of an open space with a small couch facing a reading chair, similar to that of a conventional living room.

[0030] Each seat 16 comprises a seat back 40, a seat pan 42, and a leg rest 44, which are partially surrounded by a shell 38. Furthermore, each seat 16 is configured to convert between a seat position (as best illustrated in Figures 1, 7-10, and 15) and a bed position that is substantially horizontal in flight (as best illustrated in Figures 1 and 7-10).

[0031] In the seat position, as illustrated in Figures 1, 7-10, and 15, the seat back 40 is positioned so that the seat back 40 is substantially vertical and positioned adjacent a rear wall 46 of the shell 38. To transition the seat 16 into the bed position, as shown in Figures 1, 7-10, and 15, the leg rest 44 is raised into a substantially horizontal position, the leg rest 44 and the seat pan 42 are moved toward the partition 18, and the seat back 40 slides down and toward the partition 18 until the seat back 40 is also substantially horizontal. The stationary lower surface 22 of each footwell 20 is positioned at a height that substantially aligns and mates with the leg rest 44 in the bed position so that the combination of the stationary lower surface 22, the leg rest 44, the seat pan 42, and the seat back 40 form a bed surface 54 that utilizes substantially all of the available space allocated within the seat unit 14 for each seat 16.

[0032] For example, in certain embodiments as shown in Figure 7, the bed surface may comprise an area of ~1.42m^2 [2200 in^2] with a longest diagonal length of ~2.06m [81.2 in]. In other embodiments, as shown in Figure 8, the bed surface may comprise an area of ~1.27m^2 [1961 in^2] with a longest diagonal length of ~2.09m [82.2 in]. In these embodiments, the angled design of the side 26 of each footwell 20 allows the footwell 20 to be more easily accessed by a passenger lying along the longest diagonal length of the bed surface 54. In other embodiments, the pitch of the seat unit 14 may be shorter or longer as needed or desired, which will also result in bed lengths that are shorter or longer.

[0033] The shell 38 may further comprise at least one headrest cushion 48, which may be positioned on the rear wall 46 at a location that is above and slightly spaced apart or separated from the seat back 40 when the seat 16 is in the seat position. The headrest cushion 48 may be coupled to the rear wall 46 in a fixed location on the rear wall 46 so that the headrest cushion 48 is separated from the seat back 40 and the rest of the seat 16.

[0034] In additional embodiments, the headrest cushion 48 may be coupled to the seat back 40 of each seat 16 via a kinematic so that the headrest cushion 48 moves with the seat back 40 and also converts into the bed position along with the rest of the seat 16. In other words, the seat 16 may comprise a two-piece upper surface comprising a seat back 40 and a separate headrest cushion 48 or may comprise a combination of the headrest cushion 48 coupled to the seat back 40, but still separated from one another by a gap.

[0035] In the embodiments where the headrest cushion 48 is linked to the seat back 40, the leg rest 44 may be eliminated and the stationary lower surface 22 may be configured to have a larger surface area and/or to be extendible toward the facing seat 16 so that the stationary lower surface 22 substantially aligns and mates with the seat pan 42 in the bed position (instead of with the leg rest 44). As a result, the combination of the stationary lower surface 22, the seat pan 42, the seat back 40, and the headrest cushion 48 form a bed surface 54 that utilizes substantially all of the available space allocated within the seat unit 14 for each seat 16.

[0036] The shell 38 may further comprise at least one headrest cushion 50 positioned on each side wall 52 of the shell 38. The headrest cushion 50 may be vertically aligned with the height of the headrest cushion 48 or may be at different heights as needed or desired.

[0037] An armrest cushion 58 may be positioned on each side wall 52 of the shell 38 that is below and slightly spaced apart from the headrest cushion 50. One or both armrest cushions 58 may be positioned at a height that substantially aligns with a height of the seat back 40 when the seat 16 is in the seat position or may be at different heights as needed or desired.

[0038] As shown in Figure 14, the seat 16 in the seat position has a width that is wider than a conventional business class passenger seat, the wider dimension allowing a passenger to be seated in multiple orientations. For example, a passenger may be seated so as to have his or her body oriented in a direction that is substantially parallel to the longitudinal axis Y of the seat unit 14, or the passenger may be seated so as to have his or her body oriented in a direction that is angled (or even substantially perpendicular) to the longitudinal axis Y of the seat unit 14. The arrangement of the armrests 58 at the height of the seat back 40 when the seat 16 is in the seat position, as well as the spacing between the seat back 40 and headrest cushion 48, allows a passenger to use to the seat back 40 as an armrest when the passenger is seated at an angle to the longitudinal axis Y.

[0039] Furthermore, the seat back 40 may comprise a base structure 60 to which a support surface 62 is attached. In certain embodiments, the support surface 62 comprises at least two cushions 64. The first cushion 64 is shaped and positioned to substantially cover a first portion of the base structure 60, and the second cushion 64 is shaped and positioned to substantially cover a second portion of the base structure 60. A vertically oriented end 66 of the first cushion 64 may be attached to a vertically oriented end 66 of the second cushion 64 and/or may be attached to the base structure 60. The remaining edges and surface of the first cushion 64 may be unattached, thus allowing the first cushion 64 to pivot away from the base structure 60 via the connection at its end 66, as shown in Figure 8.

[0040] Likewise, in certain embodiments, the second cushion 64 may be attached to the vertically oriented end 66 of the first cushion 64 and/or may be attached to the base structure 60. The remaining edges and surface of the second cushion 64 may be unattached, thus allowing the second cushion 64 to also pivot away from the base structure 60 via the connection at its end 66.

[0041] In other embodiments, only one cushion 64 is pivotally attached as described above, and the other cushion 64 is secured to the base structure 60 along other edges and/or surface so that the other cushion 64 is not configured to pivot away from the base structure 60.

[0042] In certain embodiments, the first cushion 64 is smaller in lateral dimensions than the second cushion 64 so that the second cushion 64 has a lateral dimension that approximates that of a traditional passenger seat, which prevents a pivot seam 68 (formed where the two vertically oriented end 66 meet) from being located behind a passenger seated in front of the second cushion 64.

[0043] Because the seat 16 is designed to be wider than a traditional passenger seat, an average passenger may not be able to use both armrests 58 at the same time. Thus, as illustrated in Figures 7-8, the use of a pivoting design for at least one of the cushions 64 allows the cushion to be rotated into a position adjacent a side of the passenger seated in front the other cushion 64 so that the passenger may use an upper surface 70 of the rotated cushion 64 as a supplemental armrest.

[0044] In the bed position, as illustrated in Figures 9-10, one or both armrests 58 may be configured to lower into a retracted position so that an upper surface 72 of one or both of the armrests 58 is substantially aligned with the bed surface 54, which further increases the amount of bed space available for each seat 16. In certain embodiments, since the longest diagonal is measured from a corner of the footwell 20 to an opposing corner 74 of the mating seat 16, it may desirable to lower the armrest 58 located in the opposing corner 74, while leaving the other armrest 58 in the raised position.

[0045] In other embodiments, one or both armrests 58 may include a cutout area 76 below the armrest 58 that is accessible when the seat 16 is in the bed position, thus providing the extra bed space in the cutout area 76 without the need to lower either armrest 58.

[0046] In certain embodiments, as shown in Figures 8-10 and 15, the monitor 78 for each seat 16 is mounted in a stowed location to a portion of the upper wall 32 located above the upper surface 28 of the opposing footwell 20. The monitor 78 may comprise a translation mechanism 80 that allows the monitor 78 to be moved into a deployed position, which comprises any suitable orientation or location that allows the monitor 78 to be viewed by a passenger seated in the mating seat 16. For example, the monitor 78 may be extended laterally into the deployed position where the monitor is positioned above the mating footwell 20. The monitor 78 may also be pivotally attached to the translation mechanism 80 so that the monitor 78 may be rotated to align with a viewing angle of a passenger seated or reclined at an angle to the longitudinal axis Y of the seat unit 14. In these em-

bodiments, the monitor 78 may be positioned in the stowed position above the upper surface 28 of the opposing footwell 20 for viewing in the stowed position, when not in use, and/or when the secondary seat 36 is being occupied by another passenger.

[0047] In additional embodiments, as shown in Figures 1, 7, and 14, the monitor 78 for each seat 16 may be mounted to a portion of the upper wall 32 located above the stationary lower surface 22 of the mating footwell 20. As described above, the monitor 78 may be pivotally attached to the upper wall 32 so that the monitor 78 may be rotated to align with a viewing angle of a passenger that is seated or reclined at an angle to the longitudinal axis Y of the seat unit 14. In these embodiments, the monitor 78 may be positioned within a recess 82 in the upper wall 32 for viewing in the stowed position, when not in use, and/or when the secondary seat 36 is being occupied by another passenger. In further embodiments, the monitor 78 may be mounted in the center of the upper wall 32.

[0048] In certain embodiments, each seat unit 14 comprises a tray table 84 for each seat 16. In some embodiments, as shown in Figure 11, the tray table 84 may be stowed on a side of the footwell 20 for use by a passenger seated in the mating seat 16. The tray table 84 may include a translation mechanism that allows the tray table 84 to be pulled toward the mating seat 16, and then lifted and laterally rotated into a substantially horizontal position in front of the mating seat 16.

[0049] In additional embodiments, as shown in Figure 12A-12B, the tray table 84 may be stowed on a side of each seat 16. The tray table 84 may include a translation mechanism that allows the tray table 84 to be pulled away from the seat 16, and then lifted and laterally rotated into a substantially horizontal position in front of the mating seat 16. Once in the horizontal position, the tray table 84 may be further rotated toward the passenger seat so that the tray table 84 may be positioned as a cocktail table or other side table adjacent a passenger seated in the mating seat 16.

[0050] In further embodiments, as shown in Figure 13, the tray table 84 may be stowed in a substantially horizontal position within a recess 86 of the footwell 20 of the opposing seat 16. The tray table 84 may then be rotated out the footwell 20 and positioned into a substantially horizontal position in front of the mating seat 16.

[0051] In certain embodiments, as shown in Figures 7 and 14, the seat unit 14 comprises a closet 88 for each seat 16. The closet 88 may be positioned adjacent one of the side walls 52 of each seat 16, such as the side wall 52 that is adjacent an aisle 90 of the cabin 10.

[0052] In certain embodiments, one of the seats 16 has aisle access adjacent the opposing footwell 20, while the other seat 16 has aisle access adjacent the mating footwell 20. In these embodiments, the space between the seat 16 and the opposing footwell 20 may be narrower than the space between the seat 16 and the mating footwell 20, as best illustrated in Figure 14. Thus, to provide more space for entrance/egress in the narrower opening, the closet 88 adjacent the narrower opening may be shifted by a distance B so as to extend past the rear wall 46 of the seat unit 14 and overlap by a distance A with the side wall 52 of an opposing seat 16 of another seat unit 14, illustrated in Figure 14.

[0053] Additional amenities within each seat unit 14 may include additional under-seat stowage and under-footwell/secondary seat stowage, as shown in Figure 15. The space between the seat 16 and the partition 18 on the non-aisle access side may be enclosed with additional stowage for amenities and other personal items, as well as water bottles or other similar items. In some embodiments, the stationary lower surface 22 may be equipped with a reading light 92. In certain embodiments, the side of the upper wall 32 where the monitor 78 is not mounted for stowage may further comprise an amenity pocket 94 or other stowage.

[0054] In some embodiments, as illustrated in Figures 2-6, the arrangement 12 comprises two columns 100A, 100B of seat units 14, each positioned along a wall of the cabin 10, and a central group 96 formed of two columns 100C, 100D of side-by-side seat units. However, a person of ordinary skill in the relevant art will understand that this is but one possible arrangement of columns, and that greater or fewer columns may be included in the cabin 10 as needed or desired to achieve the appropriate cabin density.

[0055] For purposes of the application, the terms "next-front" and "next-back" refer locally to the relative location of the seat units 14 within each column 100A, 100B, 100C, 100D, and does not refer to the orientation of the seat units 14 with respect to the overall cabin 10. In other words, the term "next-front seat unit" means that the seat unit 14 is located directly in front of another seat unit 14 within one or more of the columns 100A, 100B, 100C, 100D, and the term "next-back seat unit" means that the seat unit 14 is located directly behind another seat unit 14 within one or more of the columns 100A, 100B, 100C, 100D, but neither term is intended to refer to a more global orientation of the seat units 14 within the cabin 10.

[0056] In other embodiments, the central group 96 may be arranged so that the columns 100C, 100D are staggered from one another so that the laterally adjacent seat units 14 are not laterally aligned and therefore do not produce a symmetrical mirror image. In other words, one of the columns 100C, 100D may be staggered a few inches toward the front or the back of the cabin 10 relative to the other one of the columns 100C, 100D. As a result, the entire arrangement 12 exhibits a staggered pattern.

[0057] The configuration of the seat units 14 shown in Figures 2-6 may be identical for all the passengers, according to certain embodiments. However, a person of ordinary skill in the relevant art will understand that it is not required that each of the seat units 14 be identical in every aspect, and in some cases, it may be desirable to have the seat units 14 differ from one another in certain locations within the cabin 10. For example, it may be

desirable to provide wider seats 16 within the central columns 100C, 100D to increase the feeling of space and privacy for the central columns 100C, 100D, while providing narrower seats 16 within the window columns 100A, 100B.

[0058] Different arrangements of the components depicted in the drawings or described above, as well as components and steps not shown or described are possible. Similarly, some features and sub-combinations are useful and may be employed without reference to other features and sub-combinations. Embodiments of the invention have been described for illustrative and not restrictive purposes, and alternative embodiments will become apparent to readers of this patent. Accordingly, the present invention is not limited to the embodiments described above or depicted in the drawings, the true scope of protection only being defined by the wording of the appended claims.

Claims

1. A seat unit (14) comprising:

two seats (16) arranged facing one another, the two seats (16) optionally being substantially laterally aligned with each other and with respect to a longitudinal axis of the seat unit (14); and
a partition (18) positioned between the two seats (16);
each seat (16) comprising a seat back (40), a headrest (48), and a seat pan (42), wherein each of the two seats (16) is configured to convert between a seat position and a bed position **characterized in that**
the partition (18) comprises two footwells (20) each enclosed by a respective upper surface (28) and rear surface (30), the footwells (20) being arranged facing in opposing directions so that an opening (56) in each footwell (20) is accessible by a passenger seated in one of the two seats (16) that faces the opening in the footwell (20), each of the two footwells comprising an enclosed portion having an upper surface (28) that is configured as a table for use by a passenger seated in the one of the two seats (16) that does not face the opening (56) of the corresponding footwell.

2. The seat unit (14) of claim 1, where the partition (18) further comprises an upper wall (32) that extends above the two footwells (20), wherein a monitor (78) is mounted to the upper wall (32).

3. The seat unit (14) of claim 2, wherein the monitor (78) is slidingly mounted to transition from a stowed location above the footwell (20) with the opening (56) facing away from the seat (16) that faces the monitor (78) to a deployed position above the footwell (20) with the opening (56) facing the seat (16) that faces the monitor (78).

4. The seat unit (14) of claim 1, wherein the bed position comprises a bed surface formed by at least a stationary lower surface (22) of the footwell (20), the seat pan (42), and the seat back (40) in a substantially horizontal position.

5. The seat unit (14) of claim 4, wherein each of the two seats (16) further comprises at least one armrest (58) coupled to a side wall of a shell (38) partially surrounding each of the two seats (16).

6. The seat unit (14) of claim 5, wherein the at least one armrest (58) slides down into a retracted position substantially aligned with the bed surface.

7. The seat unit (14) of claim 5, wherein the at least one armrest (58) is positioned so that an upper surface of the at least one armrest (58) is substantially aligned with an upper surface of the seat back (40) in the seat position.

8. The seat unit (14) of claim 1, wherein the seat back (40) comprises at least one pivotally attached cushion (64) that pivots outward into a position to form a supplemental armrest.

9. The seat unit of claim 1, wherein the partition (18) further comprises an upper wall (32) that extends above the two footwells (20), each of the two footwells (20) comprising a stationary lower surface (22), the stationary lower surface (22) extending beyond the enclosed portion and upper wall (32) into the space of a passenger seated in the seat (16) that faces the opening in the footwell (20),

10. A partition (18) for use in the seat unit (14) of any preceding claim, wherein the partition comprises two footwells (20) each enclosed by a respective upper surface (28) and rear surface (30), the footwells (20) being arranged facing in opposing directions and the upper surface (28) of each of the two footwells being configured as a table, so that in use with two seats (16) arranged facing one another, each seat (16) comprising a seat back (40), a headrest (48), and a seat pan (42), wherein each of the two seats (16) is configured to convert between a seat position and a bed position, an opening (56) in each footwell (20) is accessible by a passenger seated in one of the two seats (16) that faces the opening (56) in the footwell (20), and the upper surface (28) may be used as a table by a passenger seated in the one of the two seats (16) that does not face the opening (56) of the corresponding footwell.

Patentansprüche

1. Sitzeinheit (14), umfassend:

   zwei einander zugewandte Sitze (16), wobei die beiden Sitze (16) wahlweise im Wesentlichen seitlich zueinander und in Bezug auf eine Längsachse der Sitzeinheit (14) ausgerichtet sind; und eine Trennwand (18), die zwischen den beiden Sitzen (16) positioniert ist;
   wobei jeder Sitz (16) eine Sitzrückenlehne (40), eine Kopfstütze (48) und eine Sitzfläche (42) umfasst, wobei jeder der beiden Sitze (16) so konfiguriert ist, dass er zwischen einer Sitzposition und einer Bettposition übergeht,

   dadurch gekennzeichnet, dass
   die Trennwand (18) zwei Fußräume (20) umfasst, die jeweils von einer Oberseite (28) und einer Hinterseite (30) umschlossen werden, wobei die Fußräume (20) so angeordnet sind, dass sie in entgegengesetzten Richtungen ausgerichtet sind und in jedem Fußraum (20) eine Öffnung (56) vorhanden ist, die für einen Passagier zugänglich ist, der auf einem der beiden Sitze (16) sitzt, der der Öffnung im Fußraum (20) zugewandt ist, wobei jeder der beiden Fußräume einen geschlossenen Abschnitt mit einer Oberseite (28) umfasst, der als Tisch zur Verwendung durch einen Passagier, der auf einem der beiden Sitze (16) sitzt, der nicht der Öffnung (56) des entsprechenden Fußraums zugewandt ist, ausgebildet ist.

2. Sitzeinheit (14) nach Anspruch 1, wobei die Trennwand (18) ferner eine obere Wand (32) umfasst, die sich über die beiden Fußräume (20) erstreckt, wobei ein Monitor (78) an der oberen Wand (32) angebracht ist.

3. Sitzeinheit (14) nach Anspruch 2, wobei der Monitor (78) so verschiebbar montiert ist, dass er von einer verstauten Stelle über dem Fußraum (20), wobei die Öffnung (56) dem dem Monitor (78) zugewandten Sitz (16) abgewandt ist, in eine ausgefahrene Position über dem Fußraum (20), wobei die Öffnung (56) dem dem Monitor (78) zugewandten Sitz (16) zugewandt ist, übergeht.

4. Sitzeinheit (14) nach Anspruch 1, wobei die Bettposition eine Bettfläche umfasst, die durch mindestens eine stationäre Unterseite (22) des Fußraums (20), die Sitzfläche (42) und die Sitzrückenlehne (40) in einer im Wesentlichen horizontalen Position gebildet ist.

5. Sitzeinheit (14) nach Anspruch 4, wobei jeder der beiden Sitze (16) ferner mindestens eine Armlehne (58) umfasst, die mit einer Seitenwand einer jeden der beiden Sitze (16) teilweise umgebenden Schale (38) gekoppelt ist.

6. Sitzeinheit (14) nach Anspruch 5, wobei die mindestens eine Armlehne (58) in eine zurückgezogene, im Wesentlichen mit der Bettfläche ausgerichtete Position unterverschiebt.

7. Sitzeinheit (14) nach Anspruch 5, wobei die mindestens eine Armlehne (58) so positioniert ist, dass eine Oberseite der mindestens einen Armlehne (58) im Wesentlichen mit einer Oberseite der Sitzrückenlehne (40) in der Sitzposition ausgerichtet ist.

8. Sitzeinheit (14) nach Anspruch 1, wobei die Sitzrückenlehne (40) mindestens ein schwenkbar angebrachtes Kissen (64) umfasst, das nach außen in eine Position schwenkt, um eine zusätzliche Armlehne zu bilden.

9. Sitzeinheit nach Anspruch 1, wobei die Trennwand (18) ferner eine obere, über die beiden Fußräume (20) sich erstreckende Wand (32) umfasst, wobei jeder der beiden Fußräume (20) eine stationäre Unterseite (22) umfasst, wobei sich die stationäre Unterseite (22) über den geschlossenen Abschnitt und die obere Wand (32) hinaus in den Raum eines auf dem der Öffnung im Fußraum (20) zugewandten Sitz (16) sitzenden Passagiers erstreckt.

10. Trennwand (18) zur Verwendung in der Sitzeinheit (14) nach einem der vorhergehenden Ansprüche, wobei die Trennwand zwei Fußräume (20) umfasst, die jeweils von einer Oberseite (28) und einer Hinterseite (30) umschlossen werden, wobei die Fußräume (20) so angeordnet sind, dass sie in entgegengesetzten Richtungen ausgerichtet sind, und wobei die Oberseite (28) jedes der beiden Fußräume als Tisch ausgebildet ist, so dass bei Verwendung mit zwei einander zugewandten Sitzen (16) jeder Sitz (16) einen Sitzrückenlehnen (40), eine Kopfstütze (48) und eine Sitzfläche (42) umfasst, wobei jeder der beiden Sitze (16) so konfiguriert ist, dass er zwischen einer Sitzposition und einer Bettposition umgeht, wobei eine Öffnung (56) in jedem Fußraum (20) für einen Passagier zugänglich ist, der auf einem der beiden Sitze (16) sitzt, der der Öffnung (56) im Fußraum (20) zugewandt ist, und wobei die Oberseite (28) von einem auf einem der beiden, nicht der Öffnung (56) des entsprechenden Fußraums abgewandten Sitze (16) sitzenden Passagier als Tisch verwendet werden kann.

Revendications

1. Unité de siège (14) comprenant :

deux sièges (16) disposés face à face, les deux sièges (16) étant éventuellement alignés sensiblement latéralement l'un avec l'autre et par rapport à un axe longitudinal de l'unité de siège (14) ; et

une cloison (18) positionnée entre les deux sièges (16) ;

chaque siège (16) comprenant un dossier de siège (40), un appui-tête (48) et une assise (42), chacun des deux sièges (16) étant conçu mobile entre une position siège et une position lit,

caractérisée en ce que

la cloison (18) comprend deux espaces pour les jambes (20) fermés chacun par une surface supérieure (28) et une surface arrière (30) respectives, les espaces pour les jambes (20) étant disposés de manière à être dirigés dans des directions opposées de sorte qu'une ouverture (56) ménagée dans chaque espace pour les jambes (20) soit accessible par un passager assis dans l'un des deux sièges (16) qui est dirigé vers l'ouverture ménagée dans l'espace pour les jambes (20), chacun des deux espaces pour les jambes comprenant une partie fermée pourvue d'une surface supérieure (28) et conçue comme une table à l'usage d'un passager assis dans l'un des deux sièges (16) qui n'est pas dirigé vers l'ouverture (56) de l'espace pour les jambes correspondant.

2. Unité de siège (14) selon la revendication 1, dans laquelle la cloison (18) comprend en outre une paroi supérieure (32) qui s'étend au-dessus des deux espaces pour les jambes (20), un moniteur (78) étant monté sur la paroi supérieure (32).

3. Unité de siège (14) selon la revendication 2, dans laquelle le moniteur (78) est monté de manière coulissante de façon à passer d'un emplacement de rangement situé au-dessus de l'espace pour les jambes (20), l'ouverture (56) étant alors dirigée à l'opposé du siège (16) qui est dirigé vers le moniteur (78), à une position déployée au-dessus de l'espace pour les jambes (20), l'ouverture (56) étant alors dirigée vers le siège (16) qui est dirigé vers le moniteur (78).

4. Unité de siège (14) selon la revendication 1, dans laquelle la position lit comprend une surface de lit formée par au moins une surface inférieure fixe (22) de l'espace pour les jambes (20), l'assise (42) et le dossier de siège (40) dans une position sensiblement horizontale.

5. Unité de siège (14) selon la revendication 4, dans laquelle chacun des deux sièges (16) comprend en outre au moins un accoudoir (58) accouplé à une paroi latérale d'une coque (38) entourant partiellement chacun des deux sièges (16) .

6. Unité de siège (14) selon la revendication 5, dans laquelle l'au moins un accoudoir (58) coulisse vers le bas jusque dans une position rétractée sensiblement alignée avec la surface de lit.

7. Unité de siège (14) selon la revendication 5, dans laquelle l'au moins un accoudoir (58) est positionné de sorte qu'une surface supérieure de l'au moins un accoudoir (58) soit sensiblement alignée avec une surface supérieure du dossier de siège (40) dans la position siège.

8. Unité de siège (14) selon la revendication 1, dans laquelle le dossier de siège (40) comprend au moins un coussin (64) fixé de manière pivotante, lequel pivote vers l'extérieur jusque dans une position pour former un accoudoir supplémentaire.

9. Unité de siège selon la revendication 1, dans laquelle la cloison (18) comprend en outre une paroi supérieure (32) qui s'étend au-dessus des deux espaces pour les jambes (20), chacun des deux espaces pour les jambes (20) comprenant une surface inférieure fixe (22), la surface inférieure fixe (22) s'étendant au-delà de la partie fermée et de la paroi supérieure (32) jusque dans l'espace d'un passager assis dans le siège (16) qui est dirigé vers l'ouverture ménagée dans l'espace pour les jambes (20).

10. Cloison (18) destinée à être utilisée dans l'unité de siège (14) selon l'une quelconque des revendications précédentes, la cloison comprenant deux espaces pour les jambes (20) fermés chacun par une surface supérieure (28) et une surface arrière (30) respectives, les espaces pour les jambes (20) étant disposés de manières à être dirigés dans des directions opposées et la surface supérieure (28) de chacun des deux espaces pour les jambes étant conçue comme une table de sorte que, en utilisation avec deux sièges (16) disposés face à face, chaque siège (16) comprenne un dossier de siège (40), un appuitête (48) et une assise (42), chacun des deux sièges (16) étant conçu mobile entre une position siège et une position lit, une ouverture (56) ménagée dans chaque espace pour les jambes (20) étant accessible par un passager assis dans l'un des deux sièges (16) qui est dirigé vers l'ouverture (56) ménagée dans l'espace pour les jambes (20), et la surface supérieure (28) pouvant être utilisée comme table par un passager assis dans l'un des deux sièges (16) qui n'est pas dirigé vers l'ouverture (56) de l'espace pour les jambes correspondant.

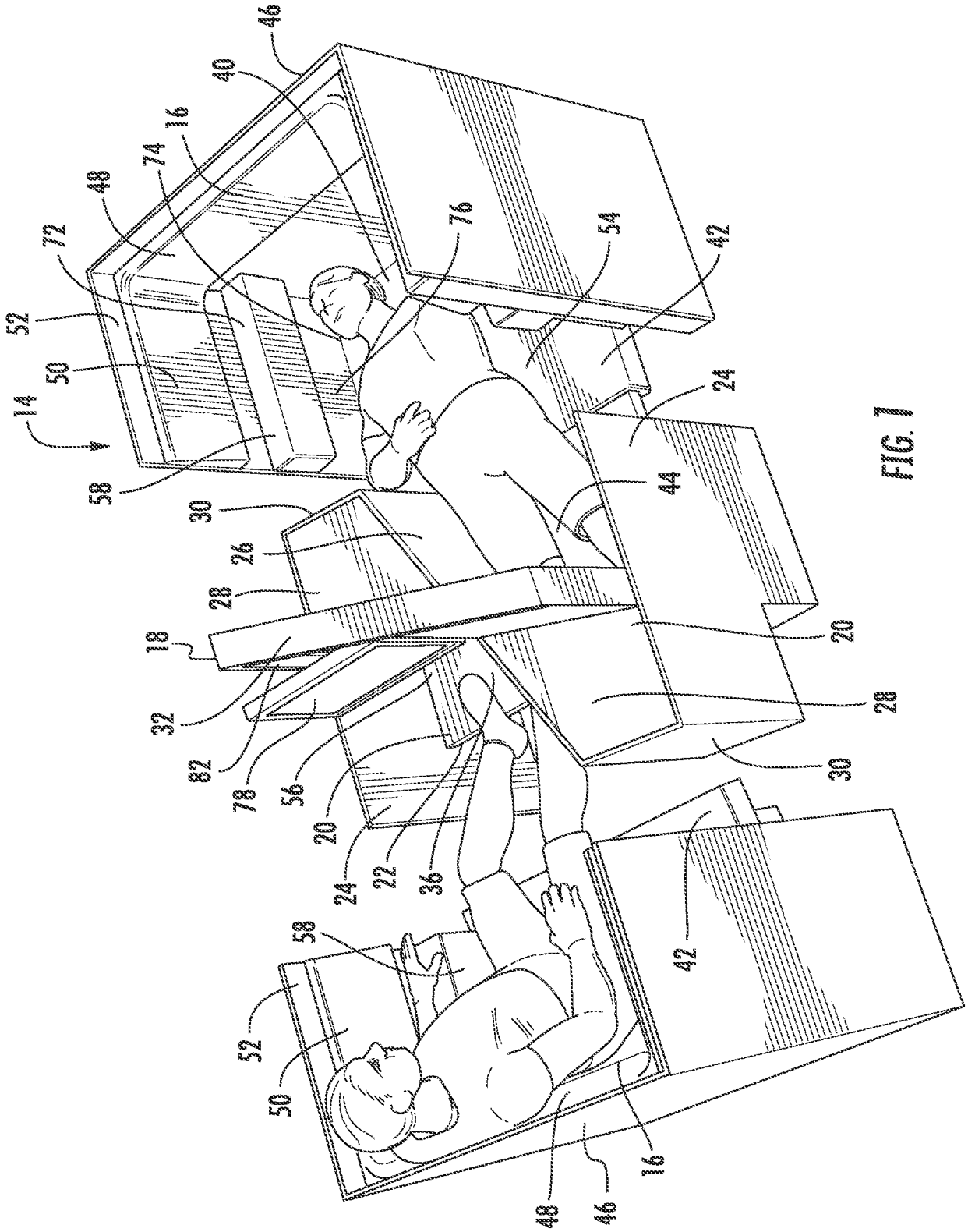

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FIG. 1

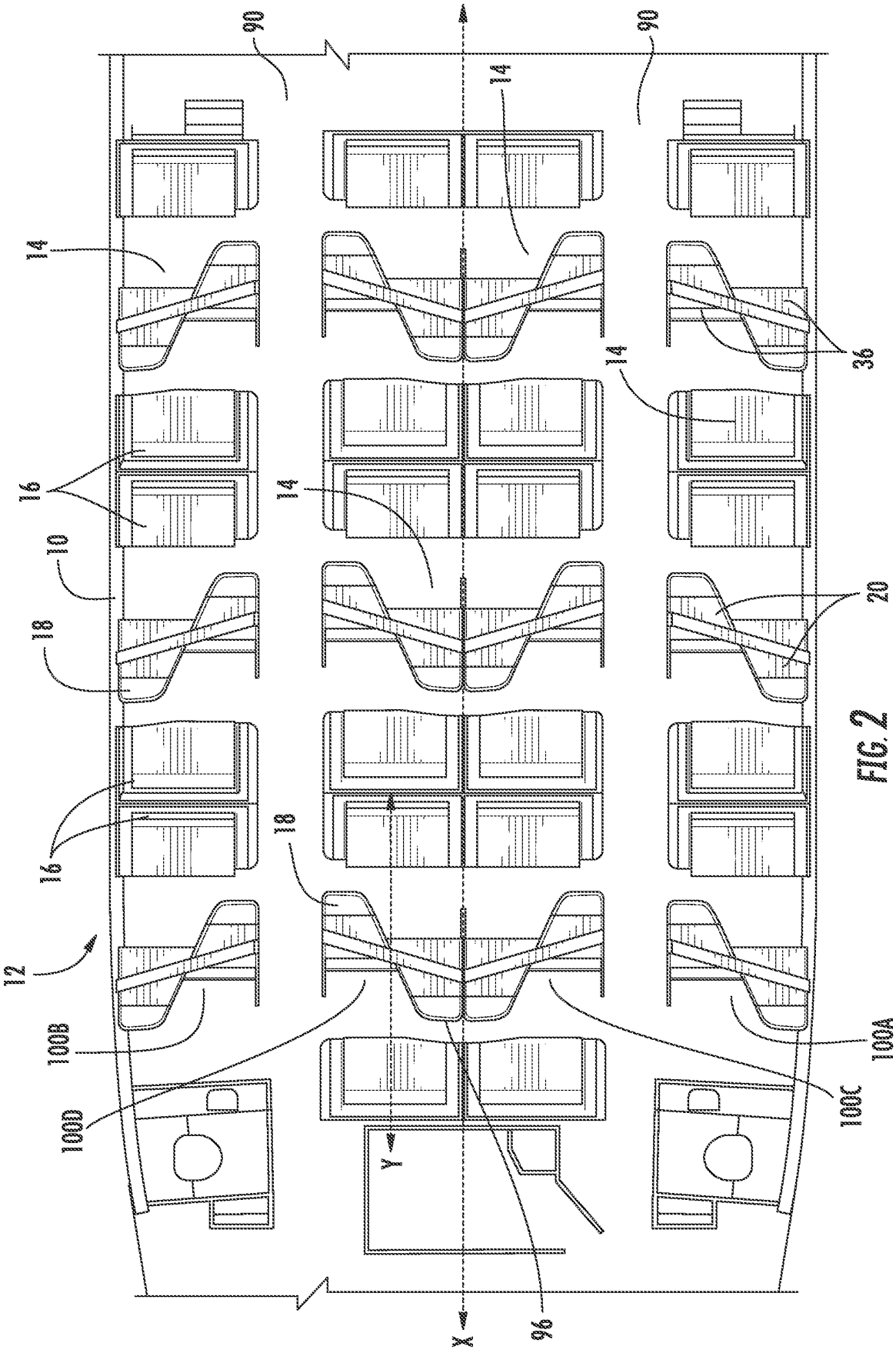


FIG. 2

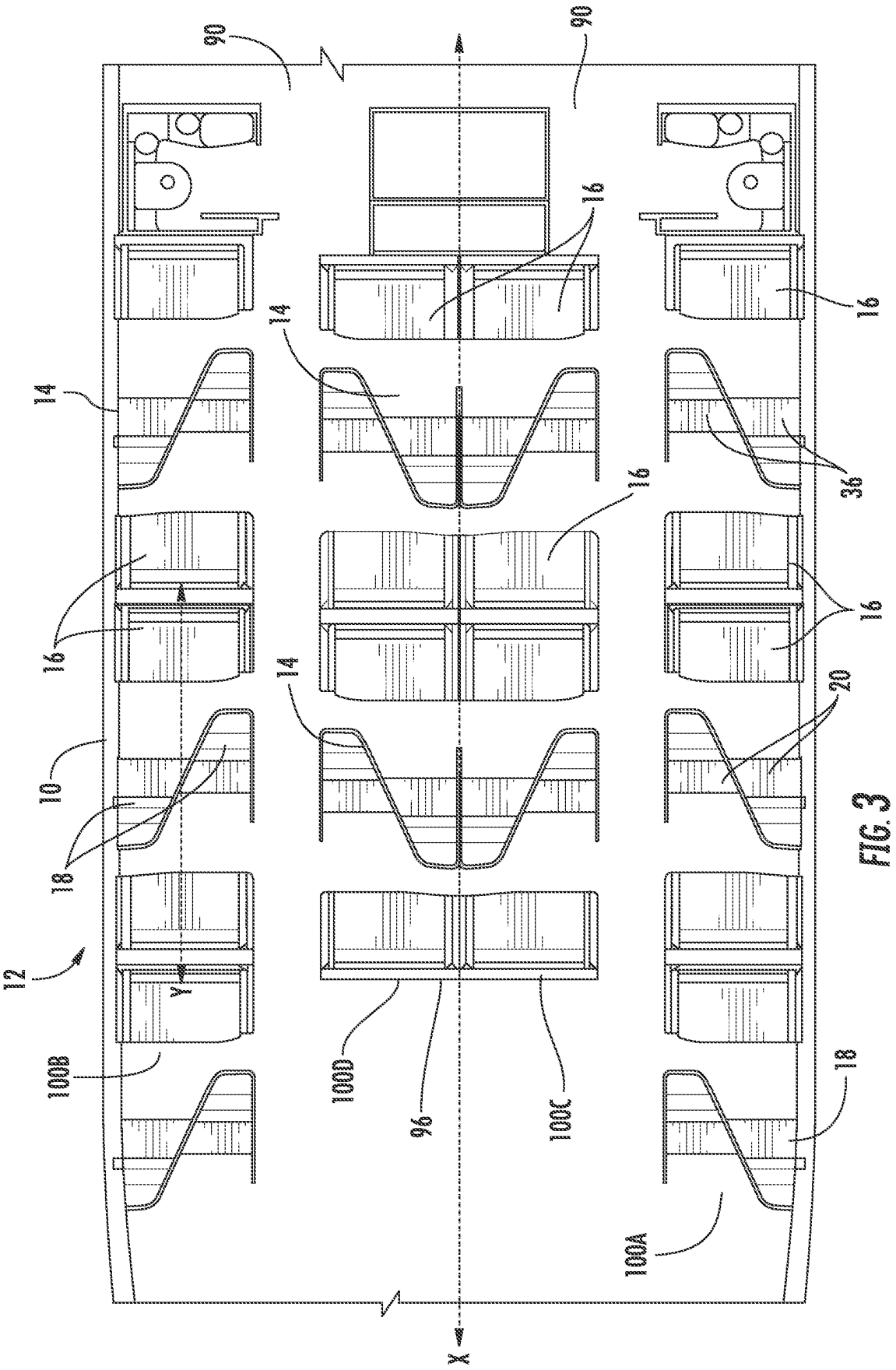

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FIG. 3

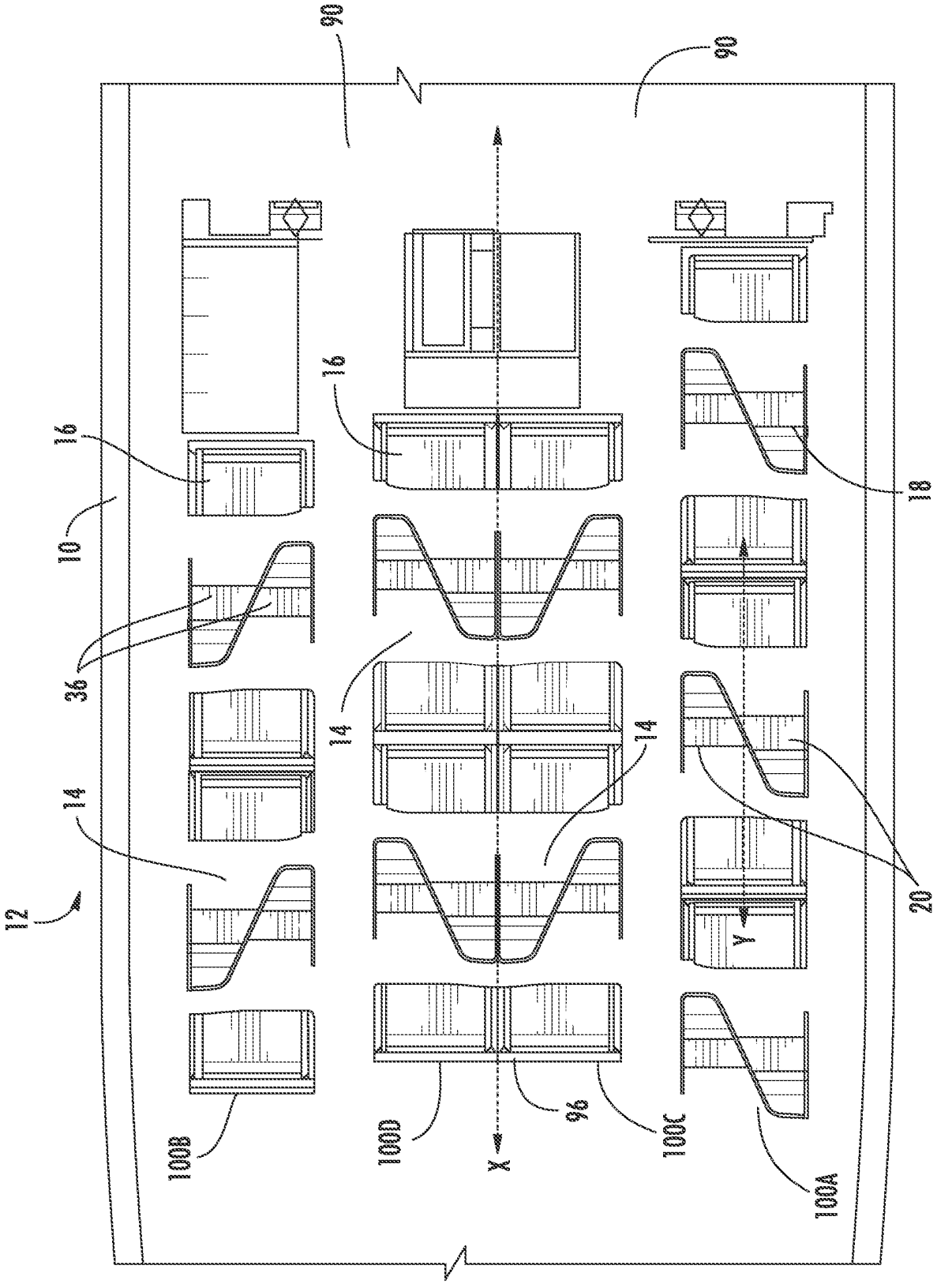


FIG. 4

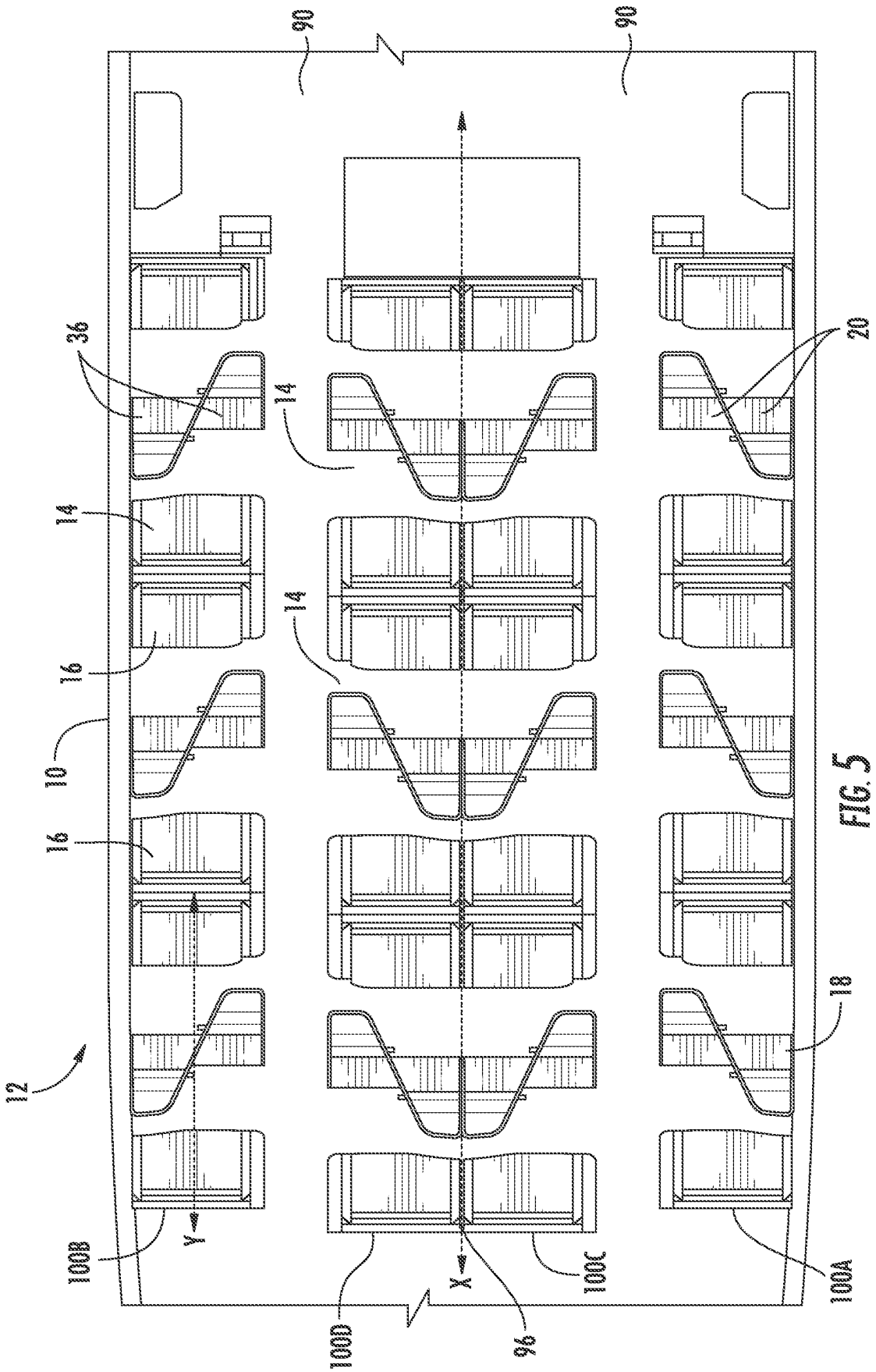


FIG. 5

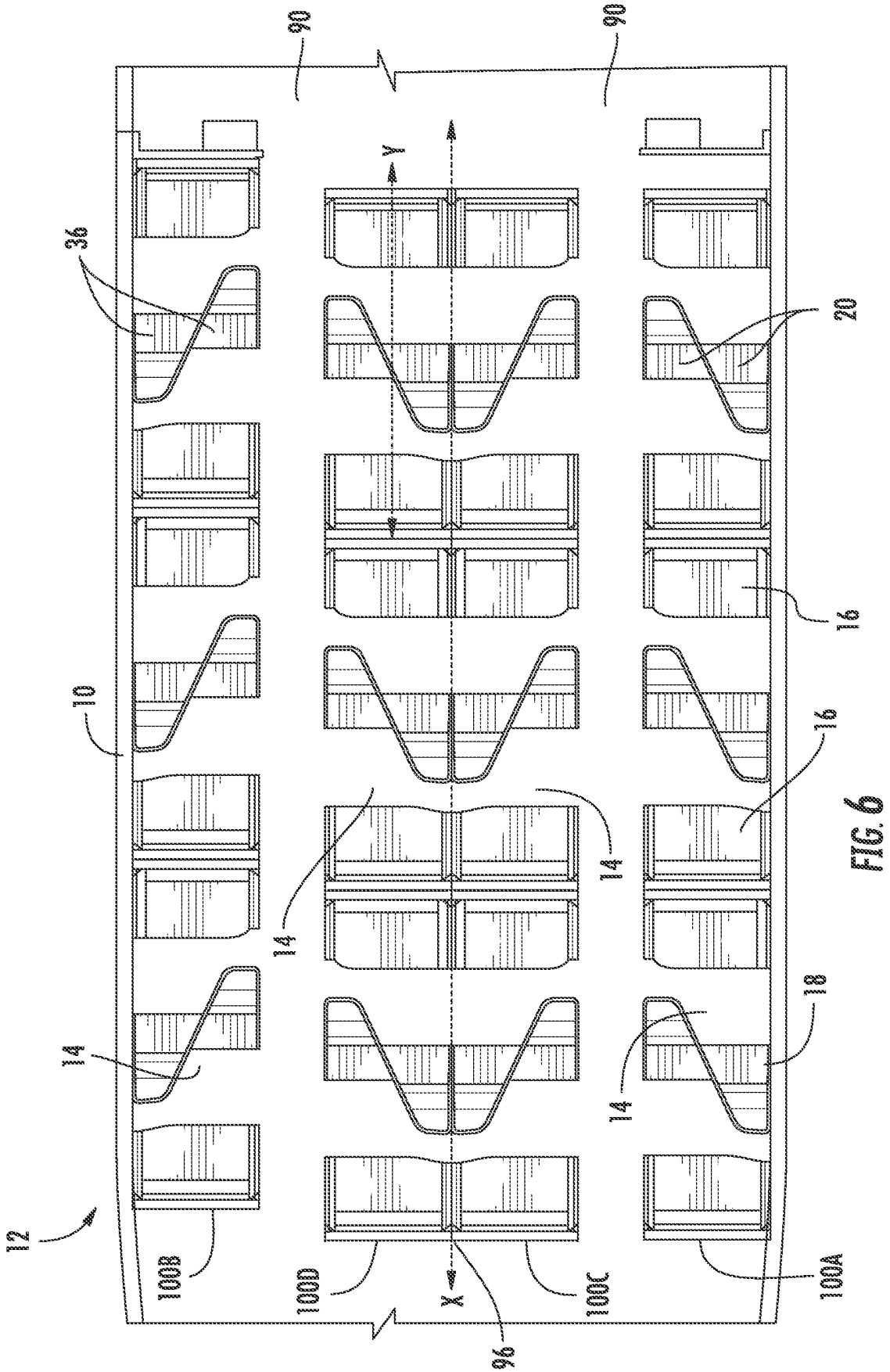


FIG. 6

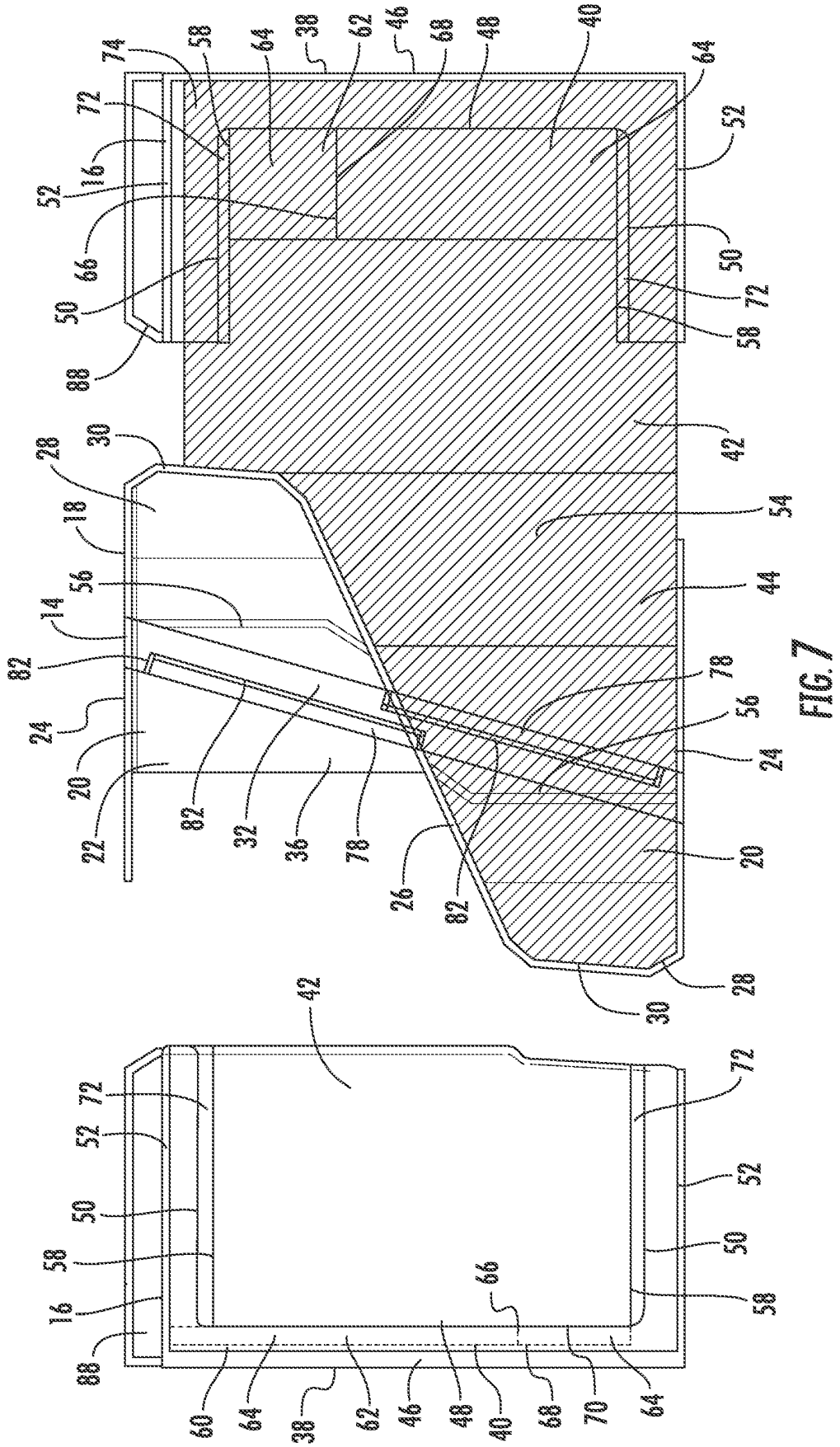

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FIG. 7

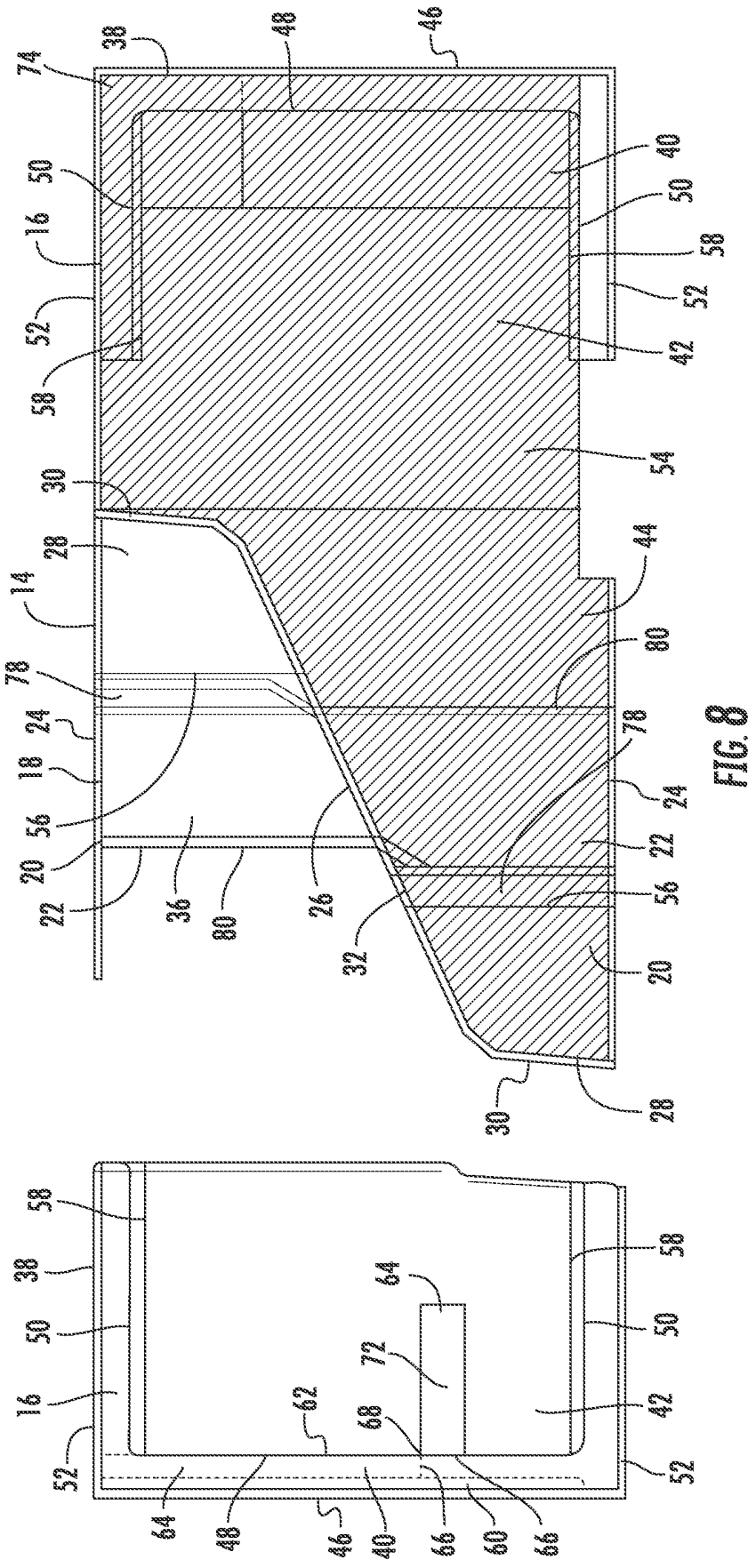

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FIG. 8

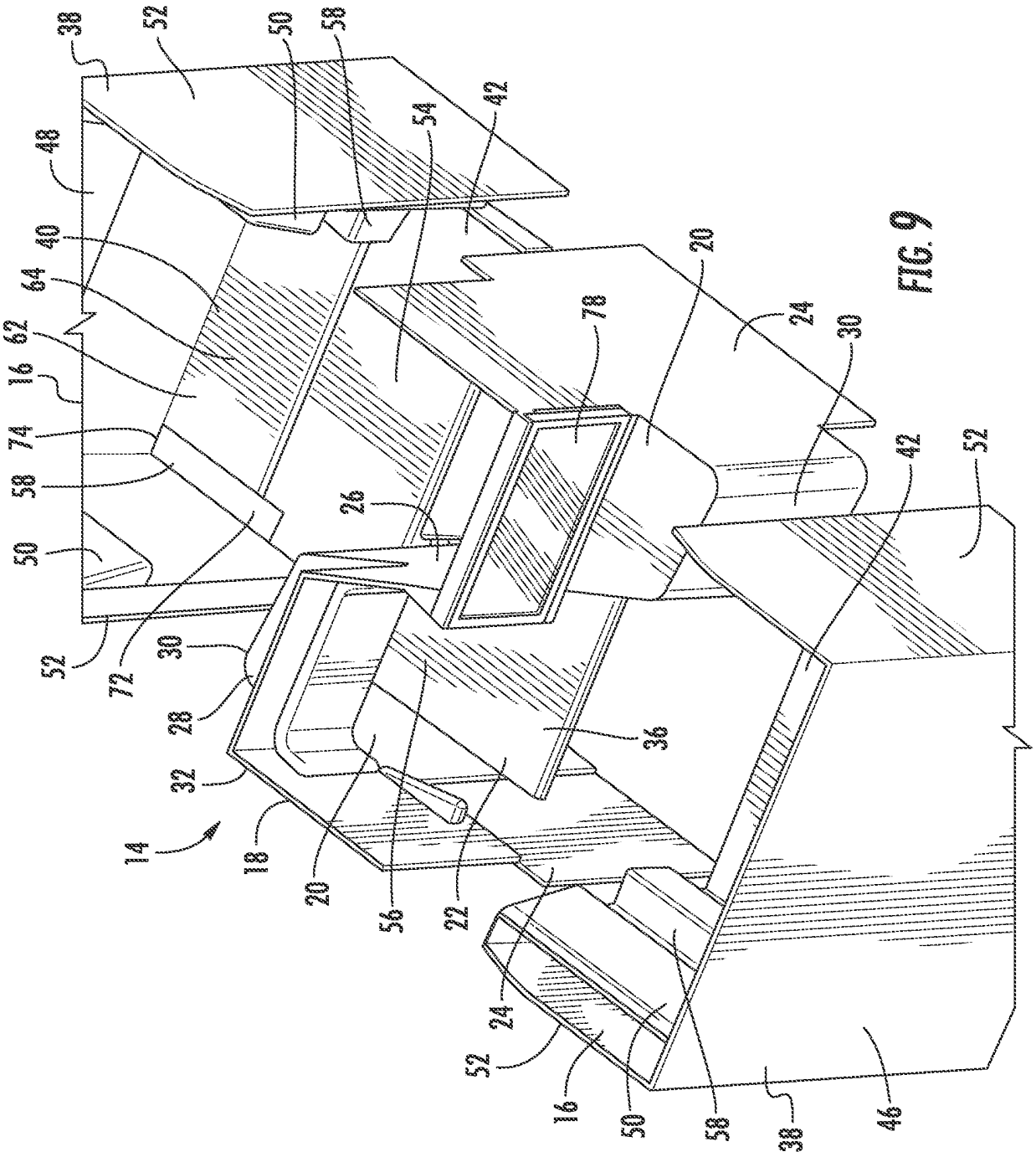

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FIG. 9

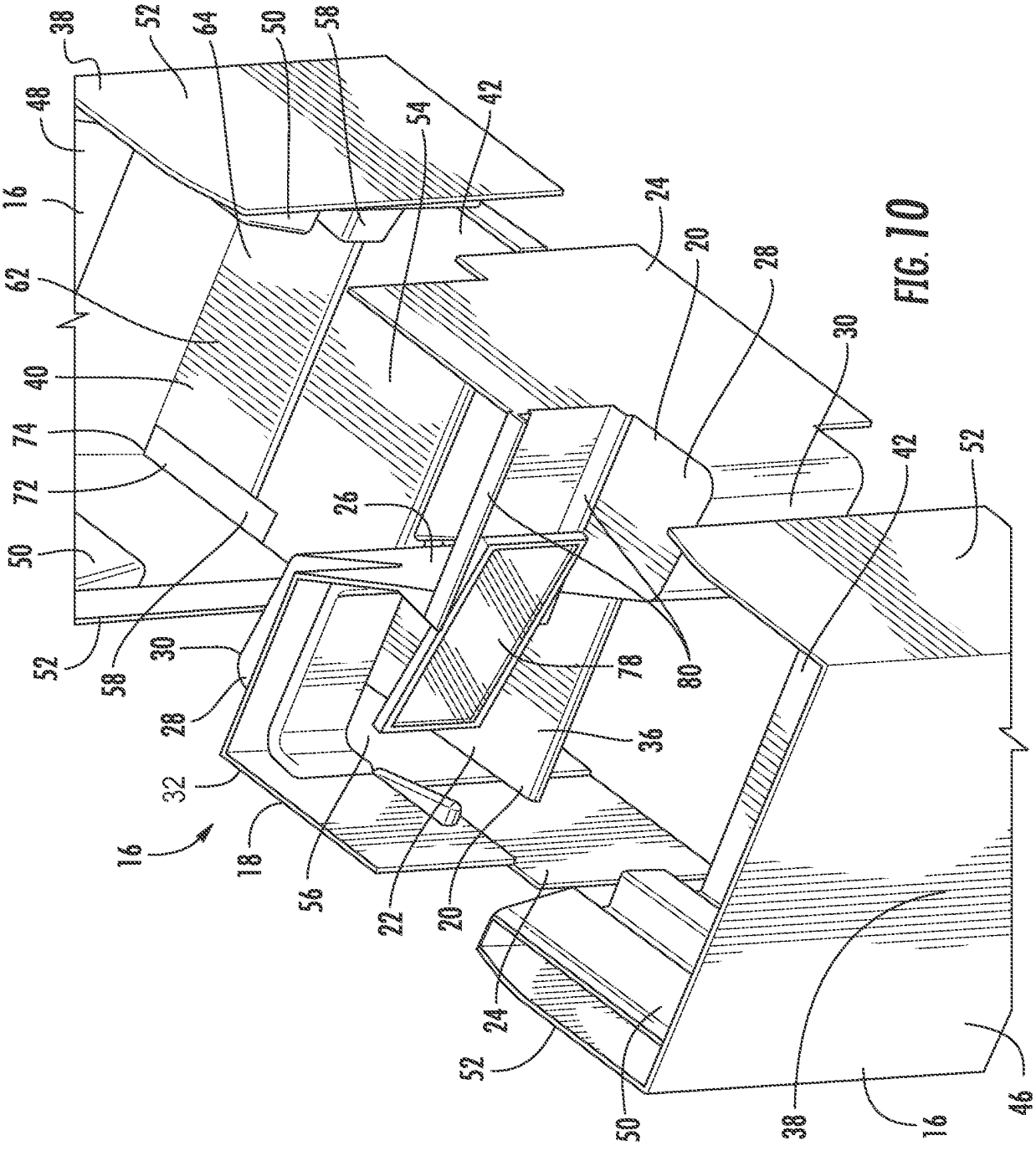

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FIG. 10

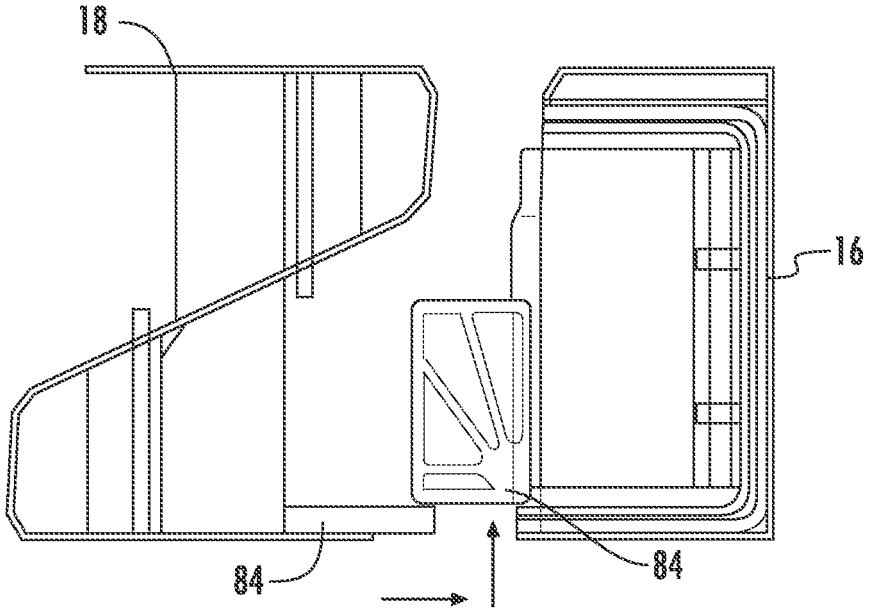


FIG. 11

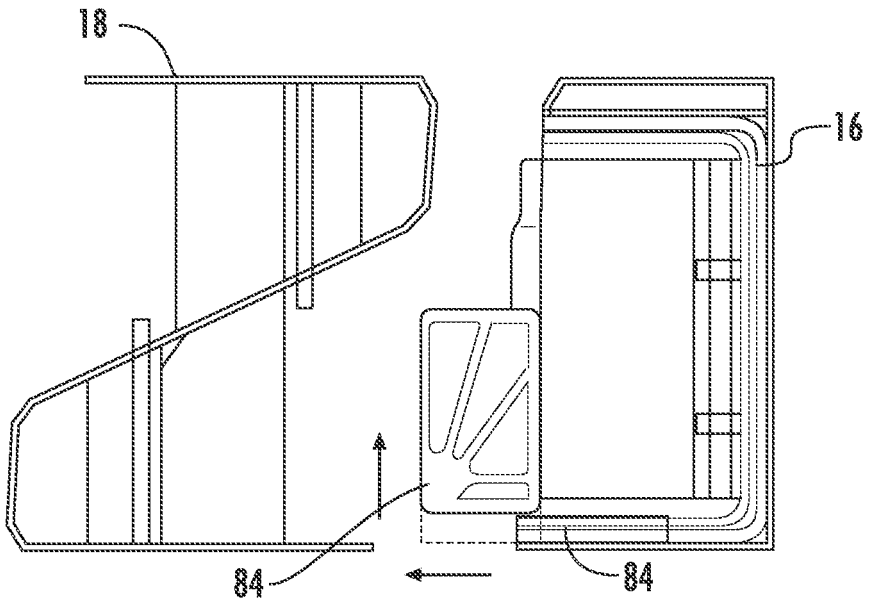


FIG. 12A

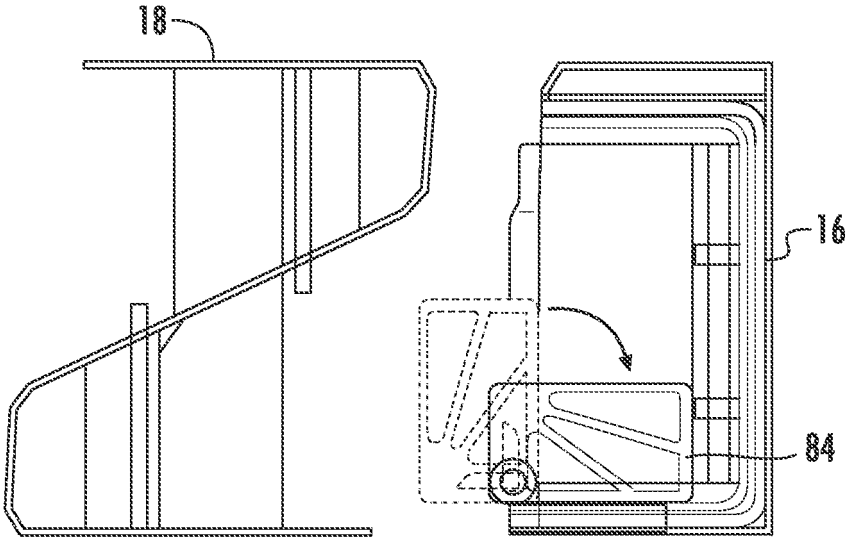


FIG. 12B

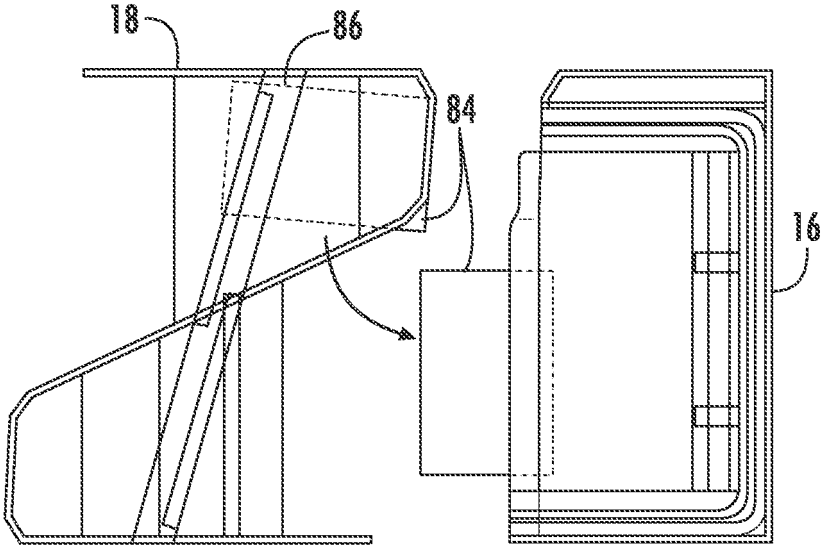


FIG. 13

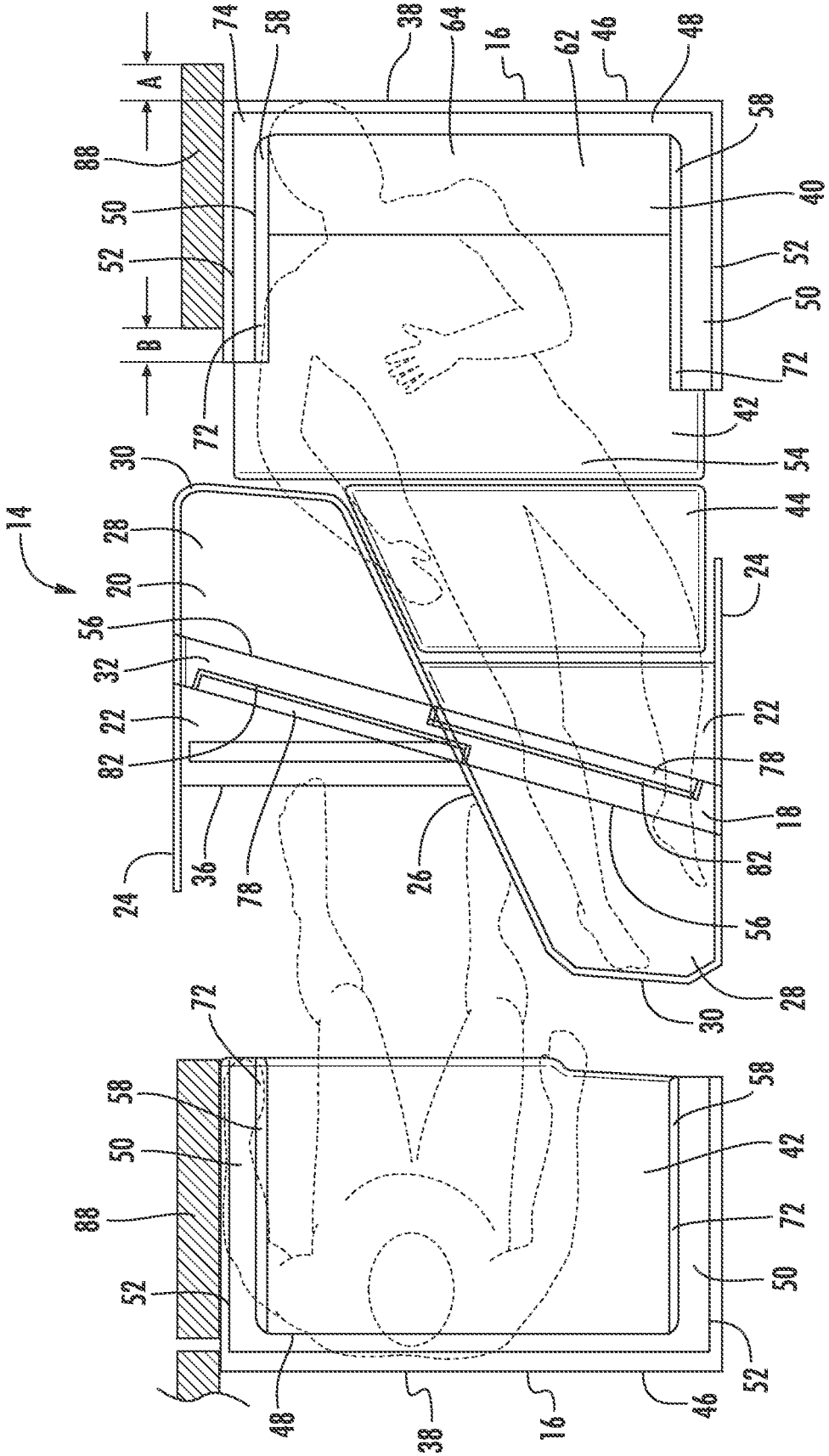

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FIG. 14

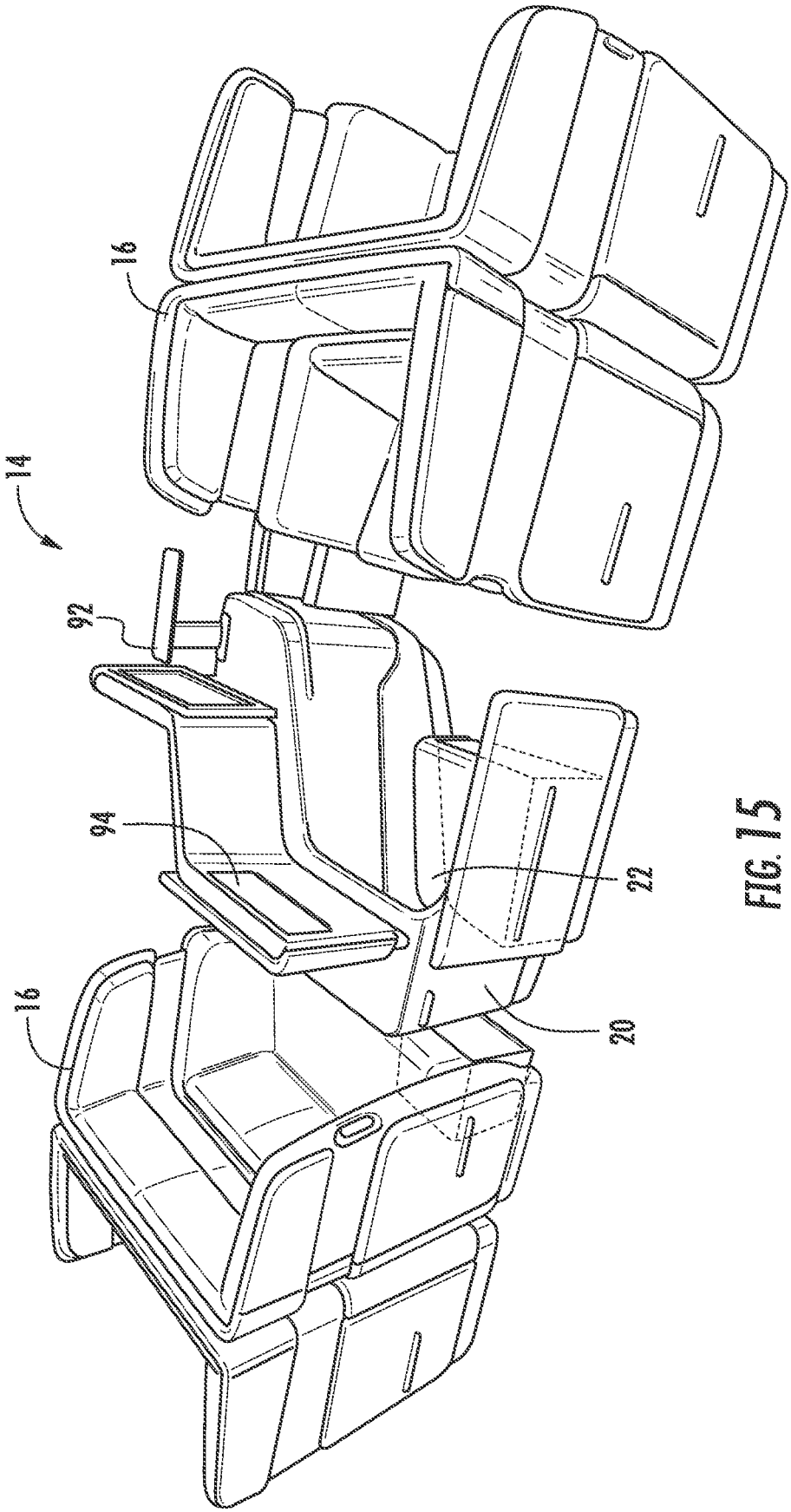


FIG. 15

REFERENCES CITED IN THE DESCRIPTION

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- US 2007040434 A1 **[0005]**